

Over 300 bridge engineers and transportation professionals from 21 countries and 35 states attended the *Sixth National Seismic Conference on Bridges and Highways*. Held July 27-30, 2008, this conference continues a series of biennial meetings organized by the Federal Highway Administration (FHWA), the Transportation Research Board (TRB), and MCEER, University at Buffalo. South Carolina Department of Transportation (SCDOT) hosted this event at the historic Francis Marion Hotel in Charleston, South Carolina. The hosts treated guests to low country cuisine consisting of “shrimp & grits” at an opening reception that featured a four instrument string ensemble.

Three plenary sessions with international keynote speakers and fourteen technical sessions supported the theme “Seismic Technologies for Extreme Loads”. South Carolina’s history with both earthquakes and hurricanes allowed other states to learn first-hand how SCDOT protects infrastructure from multiple extreme events. Organizers kicked off the week with a timely pre-conference workshop entitled “Best Practices for Seismic Design and Retrofit of Bridges”, delivered by FHWA and authors of the latest codes and guidelines.

H.B. “Buck” Limehouse, Jr., South Carolina’s Secretary of Transportation welcomed participants to his hometown, Charleston, SC.. Secretary Limehouse has long been an advocate for improving the seismic performance of structures and the highway infrastructure. In his remarks, he reminded all of the importance of a place’s history and the need to work within that context when developing projects.

Mr. Limehouse was followed by King W. Gee, FHWA’s Associate Administrator for Infrastructure who served as Honorary Conference Chairman. Mr. Gee issued challenges in his talk entitled *U.S. Highway Infrastructure in the 21<sup>st</sup> Century* and encouraged engineers present to

take pride in their important role, analogous to “fire inspector”, even though the role may not be as glamorous as “fire fighter”.

Conference Chairman W. Philip Yen, FHWA’s Seismic Specialist welcomed all and reviewed the many areas of seismic research that the FHWA has been involved in. The agency has conducted research on accelerating bridge construction in seismic regions, retrofitting existing highway bridges, designing for multiple hazards, etc.

Dr. Pradeep Talwani, Professor of Geophysics at the University of South Carolina, presented illustrations and an explanation of *The Charleston Earthquake, Then and Now* during Monday’s lunch. He showed interesting new evidence about the damaging M7.3 earthquake that struck in 1886.

An entire plenary session focused on extensive highway infrastructure damage that resulted from the May 12, 2008 earthquake in Sichuan, China. Dr. Kehai Wang, Chief Bridge Research Engineer at the Research Institute of Highways, Ministry of Communications and Transportation, in China showed many photographs of the destruction and answered questions.

The keynote speakers at another plenary session were Dr. Gian Michele Calvi, University of Pavia, Italy and Dr. Julio Kuroiwa, National University of Engineering, Lima, Peru. Professor Calvi gave an overview of the principles in his new book with his talk *Displacement Based Seismic Design of Bridges*. Professor Emeritus Kuroiwa, who has also authored a new book entitled *Disaster Reduction: Living in Harmony with Nature*, described the reconstruction of cities in Peru based on updated hazard maps.

Technical session topics included:

- Seismic Accelerated Bridge Construction,
- New Geo-Seismic Practice and Guidelines,

- Liquefaction and Mitigation,
- Emerging Seismic Design and Retrofit Technologies,
- Lessons Learned from Recent Earthquakes and Other Extreme Events,
- States' Perspectives on Evolving Bridge Seismic Specifications,
- Risk Assessment of Highway Networks
- Earthquake Strategies for Protection Against Other Hazards
- Instrumentation and Monitoring
- Design & Analysis of major Bridges in Areas of High or Moderate Seismicity
- Effect of Near-Field Earthquakes on Bridges
- Soil-Structure Interaction & Foundations
- International Technologies & Practices

In addition, there were two “current event” sessions that focused on the AASHTO Bridge subcommittee’s 2008 ballot items. National experts, working with AASHTO’s Technical Committee T3 (Seismic Design), explained guide specification changes related to the handling of liquefaction. Similarly, Technical Committee T5 (Loads) explained improvements to the way bridges in a coastal environment will be designed.

Two “best paper” awards were given in honor of the late James Cooper, who for many years led the FHWA’s seismic research program. The one for “structural” was earned by Mark Veletzos and Jose’ I. Restrepo, Department of Structural Engineering, University of California at San Diego. It was on “The Influence of Vertical Earthquake Motion and Pre-earthquake Stress State on the Seismic Response of Precast Segmental Bridge Superstructures”. The “geotechnical” award went to Kyle Rollins, Department of Civil and Environmental

Engineering, Brigham Young University; Seth Bowles, Wright Engineers; Luke Hales, ExxonMobil; Scott Ashford, School of Civil & Construction Engineering, Oregon State University for “Static and Dynamic Lateral Load Tests in Liquefied Sand for the Cooper River Bridge, Charleston, South Carolina.”

The best poster presentation was also recognized. “Post-Earthquake Bridge Repair Cost Evaluation Methodology,” by Kevin Mackie, Department of Civil and Environmental Engineering, University of Central Florida; John Michael Wong and Bozidar Stojadinovic, Department of Civil and Environmental Engineering, University of California, Berkeley was judged the best of nearly 40 posters.

Thirty-four students attended. Five undergraduate student teams from the University of Missouri - Columbia, University of Colorado at Boulder, Purdue University, Oregon State University and the University of South Carolina participated as finalists in a bridge design competition. The students on each team built a model using their own design and the bridge was subjected to an earthquake simulator test. The winner was a group of freshman comprising the “Mizzou Seismic Design Team” from the University of Missouri - Columbia.

Nineteen companies, including engineering and design firms, manufacturers of seismic products and testing specialists displayed booths in the exhibit area.

The conference concluded with a Technical Boat Tour of SCDOT’s newly constructed Ravenel Bridge, which is the largest cable stayed bridge in North America.

In addition to strong support from the host, SCDOT, the conference was made possible with assistance from Center for Transportation Infrastructure & Safety and Parsons Brinkerhoff Inc.. Other sponsors included S&ME, Inc. T.Y. Lin, International, CH2MHill, Florence & Hutchenson, Inc., HDR Engineering, The LPA Group, STV, Weidlinger Associates Inc., and

Wilbur Smith Associates, Bridge Design & Engineering, and Taylor & Francis Group.

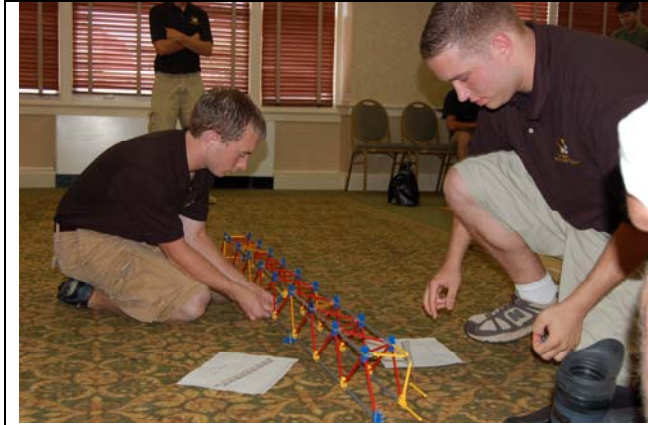
Supporting Organizations include AASHTO, ASCE, EERI, PEER, PCA, SEASC, and SC

Emergency Management Division.

Conference proceedings of the nearly 100 papers are available from MCEER at

[www.mceer.buffalo.edu/meetings/6NSC](http://www.mceer.buffalo.edu/meetings/6NSC)

	
King Gee, FHWA Associate Administrator for Infrastructure, Honorary Conference Chair	Three hundred attended the biennial conference
	
L to R: Myint Lwin, FHWA, Lucero Mesa, SCDOT and invited speakers Dr. Julio Kuroiwa, Dr. Michele Calvi	Ravenel Bridge (Cooper River Bridge) in Charleston, the largest cable stayed bridge in the U.S.



Mizzou undergraduates competing in the student bridge design competition



One of the many technical displays